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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/082,072	02/26/2002	Tomohiro Yamaguchi	018987-038	5410

7590 01/04/2005

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EXAMINER	
PERUNGAVOOR, SATHYANARAYA V	
ART UNIT	**PAPER NUMBER**
2625	

DATE MAILED: 01/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/082,072	YAMAGUCHI, TOMOHIRO	
	Examiner	Art Unit	
	Sath Perungavoor	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02/26/2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *05/01/2002*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 2001-055768, filed on 2/28/2001.

Specification

2. The disclosure is objected to because of the following informalities: The specification contains spelling mistakes and word processing errors. For example, "exit" on page 2 line 12 and "□" in page 12 line 23.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawai et al. (US 5,339,365) in view of Yajima et al. (US 4,074,231).

Regarding claim 1, Kawai et al. discloses an image processing apparatus for conducting edge enhancement processing on an original image, comprising (Fig. 1A):

an enhancement amount calculation unit for calculating a density enhancement amount for each edge pixel of the original image, the edge pixel being a pixel in an edge area in the image (105 on Fig. 1A; Fig. 2B; Col. 5 Line 62; The cited reference discloses the edge emphasis circuit, where enhancement amount calculations are made for the edge pixels.)

a density processing unit for correcting a density of each edge pixel of the original image in a manner to reduce variations in densities in the overall edge area (103 on Fig. 1A; Fig. 2A; Smoothing function disclosed corrects the variations in density along the whole image, including the edge area.); and

a density calculation unit for calculating an enhanced density of each edge pixel from the corrected density and the corrected density enhancement amount (Equation 1; The equation discloses an enhanced density that is an addition of smoothing and enhancement and corrected by the factor α.).

However, Kawai et al. does not disclose a correction in the density of enhancement in a manner to reduce the variations in the density enhancement amounts in the edge area.

Yajima et al. discloses the correction in the density of enhancement in a manner to reduce the variations in the density enhancement amounts in the edge area (Col. 6 Lines 24-27; Cited reference discloses smoothing of the edge enhanced image to reduce the variations in density. This would have same effect as the smoothing of enhancement amount and adding that to the original image. Since, the operation is

linear, order of execution does not affect the result. The additional features of the noise suppressor and its related components can be removed.).

It would have been obvious to one with ordinary skill in the art at the time of invention to modify the teaching Kawai et al. with Yajima et al. to develop a correction method for enhancement density variations. Smoothing is used to reduce variations and may be used in any situation. Hence, one would use smoothing to reduce the variations in the enhancement amount.

Regarding claim 5, Kawai et al. discloses an image forming apparatus for forming an image, comprising the image processing apparatus of Claim 1, wherein

the image is formed based on image data on which edge enhancement processing has been conducted by the image processing apparatus (417 on Fig. 4).

Regarding claim 8, all claim limitations have been set forth and rejected in the discussion for claim 1.

4. Claims 2-4, 6-7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawai et al. in view of Yajima et al. as applied to claim 1 above, and further in view of Baxes (NPL document, see PTO-892).

Regarding claim 2, Kawai et al. and Yajima et al. meet the claim limitations as set forth in the discussion for claim 1.

However, neither Kawai et al. nor Yajima et al. expressly disclose the image processing apparatus of Claim 1, wherein the enhancement amount processing unit changes the density enhancement amount for a target pixel in the edge area to a greatest edge enhancement amount in a predetermined area that includes the target pixel and edge pixels surrounding the target pixel.

Baxes discloses a method where the target pixel value is replaced with the greatest pixel value in the predetermined area that includes the target pixel and edge pixels surrounding the target pixels (Page 142 and Fig. 5.16).

It would have been obvious to one with ordinary skill in the art at the time of invention to modify the teachings of Kawai et al. and Yajima et al. with Baxes to change the density of enhancement amount in a target pixel to the greatest value in the predetermined area. Dilation eliminates the variation in the pixel values of an image. If it were applied to an array of enhancement values or an enhanced image, the effect would be the same.

Regarding claim 3, Kawai et al. and Yajima et al. meet the claim limitations as set forth in the discussion for claim 1.

However, neither Kawai et al. nor Yajima et al. expressly disclose the image processing apparatus of Claim 1, wherein the density processing unit changes the density of a target pixel in the edge area to a greatest density in a predetermined area that includes the target pixel and edge pixels surrounding the target pixel.

Baxes discloses a method where the target pixel value is replaced with the greatest pixel value in the predetermined area that includes the target pixel and edge pixels surrounding the target pixels (Page 142 and Fig. 5.16).

It would have been obvious to one with ordinary skill in the art at the time of invention to modify the teachings of Kawai et al. and Yajima et al. with Baxes to change the density of the target pixel to the greatest value in the predetermined area. Dilation eliminates the variation in the pixel values of an image. Hence, one would use dilation to reduce variations in density in an image or array.

Regarding claim 4, all claim limitations have been set forth and rejected in the discussion for claims 1-3.

Regarding claim 6, Kawai et al. discloses a judgment unit for judging whether a target pixel is an edge pixel, which is in an edge area, based on the image data (Fig. 2B; 108 on Fig. 1A)

All remaining claim limitations have been set forth and rejected in the discussion for claims 1-3.

Regarding claim 7, all claim limitations have been set forth and rejected in the discussion for claims 5 and 6.

Regarding claim 9, all claim limitations have been set forth and rejected in the discussion for claims 2 and 8.

Other Prior Art Cited

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lebeau (US 5,115,475) discloses the dilation of an enhanced image.

Katori et al. (US 5,995,248) discloses a MTF correction method.

Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sath Perungavoor whose telephone number is (703) 306-4116. The examiner can normally be reached on Monday to Friday from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta whose telephone number is (703) 308-5246, can be reached on Monday to Friday from 9:00am to 5:00pm. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sath Perungavoor
Art Unit 2625
December 20, 2004

KANJIBHAI PATEL
PRIMARY EXAMINER